Missouri River
Fourth Plenary Group Meeting
Ramkota Hotel
Sioux Falls
August 19. 2005

Please Note: For information on use and meaning of meeting summary notes, see Appendix A.

Section 1 - General Meeting and Process Summary

Attendance: Plenary members or alternates attended this meeting.

The Plenary Group reached consensus recommendations on approximately 35-40% of the issues which the CDR Team proposed for discussion. The most significant areas where consensus was not reached were (a) flood control constraints and (b) storage preclude.

Storage preclude - Consensus was reached on the following:
- No relaxation below 40 MAF.
- Need to consider proposed reservoir elevation levels when setting storage precludes.
- Use runoff forecast as component of determining preclude.
- No separate protocol regarding frequency.

Storage preclude - Key disagreements included:
- Should the preclude be at 40 MAF, 49 MAF or higher?
- Should the first Spring Rise have a preclude lower than 40 MAF.

Consensus recommendations for First and Second Rises included comments on timing, peak duration, falling rate and general suggestions on magnitude considerations and a range of proration.

Section 2 -The CDR Spring Rise Team Process Comments

Although the recommendations of the Plenary Group were far from a complete set of long-term Spring Rise criteria, the CDR Team believes that this process produced or showed that:
- A very successful recruitment of technical data and persons on key issues.
- A very strong and broad based representation among stakeholder representatives.
- Representatives worked well in the data exchange and discussion processes, and improved their understandings of the issues presented.
- Identified key areas for future MRRIC work including among others data needs, modeling requirements and challenges, monitoring and evaluation, and understanding how adaptive management will need to work.
- Demonstrated to each other how collaborative processes can work.
- Accomplished a tremendous amount of complex work in less than 90 days.

The CDR Team suggests that the following issues or situation adversely affected the collaborative work in this process:

- Representatives at times worked well with interest based bargaining, and at other times, at least in part, fell into positional and ineffective bargaining.
- From time to time, selected representatives or institutions did not demonstrate openness to accepting data or new perspectives.
- Outside political pressures or litigation processes/attitudes resulted in some inflexibility (actual or perceived).

In sum, the CDR Team believes the Plenary and Technical Groups showed great perseverance and diligence in a very challenging and demanding task. We are proud of your collective efforts and attitudes and wish you success as MRRIC moves toward formation and function. As a general comment, the CDR Team felt that Plenary Group representatives worked to follow the Protocols and move this toward success, and we appreciate your hard work.

Section 3 - Meeting Details

Opening and convening: The Plenary Group convened at 8:00 August 19th with welcoming remarks by Governor Michael Rounds of South Dakota. Chris Moore and Joe McMahon of the CDR Team welcomed the group and asked participants to introduce themselves.

Agenda Review. Moore and McMahon defined the task for the day, to develop recommendations on a 2006 Spring Rise on the Missouri River that can be submitted to the Corps of Engineers and the US Fish and Wildlife Service for their consideration and implementation. Moore and Mahon also noted and discussed with the group:

- The proposal for a Spring Rise would be a start point and would be the focus of development for a long term plan using adaptive management in the future;
- Interests of all parties had been identified and presented at previous meetings, and would need to be considered to the greatest extent possible when developing final recommendations;
- Work conducted by the Hydrology Technical Working Group, and the interagency technical team (COE and FWS) since the last Plenary Group Meeting would need to be considered when making recommendations;
- A consensus decision would be the strongest form of agreement, one with the most predictability and lowest risk, and one that the COE/FWS would be most likely to implement. Note, consensus does not mean unanimity
- There will be several possible levels of agreement – 1) Group consensus on a total set of recommendations to the COE/FWS; 2) general agreement by a large or "super majority" of Plenary Group members on most recommendations to the COE/FWS, with those who cannot support specific components either: a) standing aside and remaining mute, i.e. neither supporting nor objecting, and allowing the group to make a decision on a recommendation; b) standing aside, but articulating verbally their concerns or objections; or c) consensus on specific recommendations with no recommendations from the Plenary on issues where there is not full agreement.

Report from the Technical Staff Work conducted for the Plenary by the USACE and USFWS

Charlie Scott of the USFWS reported to the group on the deliberations and recommendations of sideboards for a Spring Rise developed by interagency technical discussions. These included:

- **A system storage preclude no higher than 40 MAF**.
  Agencies considerations: The Agencies believe that 40 MAF spring rise preclude level for the ten-year plan affords sufficient conservation benefit for pallid sturgeon.

- **Some form of interim relaxed preclude below 40 MAF to encourage a first Spring Rise in 2006 or 2007 because one has not occurred for the last five years.**
  Agencies considerations: The Agencies see that there has not been a spring rise below Gavin's Point Dam for many years, and applying the 40 MAF preclude level in 2006 could further delay a necessary element for pallid sturgeon conservation. An approach that would address this concern is application of the 40 MAF preclude level only *after* one year of a spring rise, and set a "first year only" spring rise System storage preclude level at 36.5 MAF (for both the March and May rises). Under this approach, for example, there would not have been a spring rise in 2005 because the spring rise preclude (36.5 MAF) would have prevented a rise when the System storage level was only 35 MAF (which is the lowest level actually experienced during the current drought). Furthermore, under this approach a spring rise would not occur in years where the current drought criteria wouldn't be mitigating loss in storage (such as eventual shortening of the navigation season as a result of the July 1st system storage check).

- **A Spring Rise peak magnitude of at least 16 kcfs.**
  Agencies consideration: Consistency with the BiOp.

- **A minimal relaxation of Flood Control Constraints to ensure sufficient number of Rises, which would involve adjustments at Omaha and Nebraska City (as has been discussed in the HG conference calls)**
  Agencies consideration: According to calculations provided by hydrologists, flood control constraints would need relaxation from those presented in the CWCP. The minimally relaxed flood control constraints identified by the Corps allow for sufficient spring rises to meet pallid sturgeon conservation needs and address risk concerns raised by downstream stakeholders.

- **Spring Rise Peaks of two days duration with a 30% drop in magnitude after the peak.**
  Agencies consideration: save water and reduce down stream effects.

- **Proration Limits on the May Rise to make the proration on the May Rise from 100% at storage of 54.5 MAF to 75% at 40 MAF.**
  Agencies considerations: The Agencies believe that the May rise magnitude should be prorated from 54.5 MAF to the spring rise preclude level (40 MAF, except for the first year only at 36.5 MAF). They further believe that the lowest May rise (40 MAF, except for the first year only at 36.5 MAF) should be no less than 75% of the magnitude at 54.5 MAF.

- **At some time after the first Rise, a possible reversal of the rises (March rise larger than May) to examine habitat creation and minimize possible impacts of a second Rise.** Agencies considerations: The pallid sturgeon evolved with the natural hydrograph, and the natural hydrograph of the Missouri River reflected a bimodal pattern of rises; that is why the Biological Opinion specifies a bimodal pattern. After one initial year of implementation, the Service is open to consideration of reversal of the magnitude of the two pulses (March and May rises). This would allow for data collection on the higher-magnitude-in-May scenario for the first year, with subsequent assessment of a higher-magnitude-in-March scenario.

Report from the New Hydrology Working Group

At the conclusion of the Omaha Plenary Group meeting, a New Hydrology Working Group was created, composed of both former Technical Working Group members and several Plenary Group members. This group was mandated to review model runs conducted by the Corps of Engineers, review proposals for upper basin precludes and Flood Control Constraints proposed by Plenary Group members, consider the criteria/sideboards identified by agency technical staff, and then make recommendations regarding which model runs most closely met the combination of interests of concerned parties. Robb Jacobson of the USGS was to review the work of the New Hydrology Working Group and draw conclusions regarding the soundness of methodologies being used and the its conclusions

David Barfield presented a number of conclusions of the New Hydrology Group's analysis. Some of the group's conclusions included:

- Various runs either generally meet, or do not meet, the proposed precludes and Flood Control Constraints proposed by Plenary Group members at the Omaha meeting, or the parameters provided by the Agencies;
- While some of the model runs seem to be promising, they will need to be evaluated in terms of specific recommendations by the Plenary Group on components of a Spring Rise;
- Maintaining the Flood Control Constraints in the Current Water Control Plan will significantly limit the number of Spring Rises. Most of the model runs with current Flood Control Constraints will result in fewer rises than required by the USFWS, rises in 60-70% of the years in a hundred year period;
- Proposed relaxed flood control constraints, recommended by the Agencies' technical working group, are projected to add six hours of increased flows for the first rise and 36 hours for the second rise above the CWCP.

There was considerable debate on (a) the usefulness of modeling in predicting flooding and the number of Rises and (b) how many Spring Rise events should constitute success in the design of Spring Rise criteria.

A summary table of the runs and conclusions is attached in Appendix B.

It should be noted that John Drew, State Geologist for Missouri, questioned the viability of the model used by the Corps to draw conclusion about potential flood impacts. Robb Jacobson reviewed the methodology used by the Corps and noted that in general the methodology and

conclusions were sound. Robb also provided a methodology for comparing socioeconomic impacts and impacts on the pallid sturgeon.

Spring Rise Plenary Group Recommendations

The Plenary Group then shifted its focus to the development of recommendations for a Spring Rise that would be submitted to the USACE and USFWS. The process involved identification of where Plenary Group members were regarding recommendations on various components of the Spring Rise, and then looking at each component and trying to develop agreements. Plenary participants were asked to work in small mixed interest groups to develop integrative proposals that met as many interests of concerned parties as possible. Listed below are:

1) Consensus recommendations by the Plenary Group on various components of a Spring Rise
2) Issues where consensus was not reached, but considerations or procedures that the Plenary Group would like the USACE and USFWS to consider when making decisions on a Spring Rise;
3) Procedural recommendations for monitoring various aspects of the Spring Rise.

Code for recommendations listed below:

Green indicates agreement.

Red indicates an attempt to reach an agreement, but where no agreement was reached.

Yellow indicates small mixed interest group proposals that require more analysis than time allowed before any agreement could be reached.

1. Storage Preclude

Agreements

- **No relaxation below 40 MAF**
- **Need to consider proposed reservoir elevation levels when setting storage precludes**
- **Use runoff forecast as component of determining preclude**
- **No separate protocol regarding frequency**

No Agreement

- **No agreement was reached on the issue of 40 or 49 MAF preclude, but greater numbers overall of Plenary Group members were in favor of 40 MAF.**

Options to be considered by the Agencies

- **40 MAF (3 groups)**
- **40-44 MAF on March 1st plus lower than median runoff forecast equals preclude**
- **49 MAF (2 groups)**
    - **i. [more and longer gaps between SRs]**

ii. not much difference between 40 and 49 MAF in # of SRs, but if 40 MAF would have greater impact on navigation

iii. 49 MAF provides protection for cold-water habitat in upper basin

- 55 MAF (some support)
- Use lower quartile rather than median
- Do storage checks
- No relaxation of preclude; have precludes drive protocol
- No consensus on 36.5 for 2006
  - i. Some Plenary Group members are ok with 36.5 MAF for 2006 if we can address tribal water quality intake concerns in Oahe
- Cold water habitat and recreation in upper reservoirs needs to be considered by MRRIC

2. **First Rise**

Agreements

- Flow as close to navigation target as possible
- No earlier than March 15th and ending by April 7th on rising limb of thermograph but consider completing before 16 degrees
- Need to discuss differences between 5000 and 7500 CFS
- From winter flow, an implementation rate at 3,000 CFS/day up to SR peak of 5000 to 7500 CFS release above navigation target
  - To get 30% drop from above navigation target flows (more predictable than using winter flows)
- SR peak duration is 2 days
- Fall duration is 2 days with 30% drop in magnitude after peak
- No proration based on these guidelines

Options for consideration by the Agencies

- No more than 31,000 CFS (i.e., BiOp)
- 2.5 day rise rate for SR
  - Normal navigation rise rate is 8 days (approx 3,000 CFS/day)

3. **Flow between Rises**

Agreement

- **Flow between rises is navigation target flows**

4. **Second Rise**

Agreements

- **Consider temperature recommendation from the PS working Group, i.e., two days of water temperature at 16 degrees**
- **Peak no later than May 20th**
- **Start no sooner than May 1st**
- **Consider timing for plovers**
- **Plover concerns is constraint on 2nd SR; needs further consideration**
- **Consider Upper Basin concerns**
- **Peak magnitude: 5,000/16,000 CFS**
- **For 2006, maximum 16,000 CFS above whatever being released from Gavins to reach navigation service target levels at Sioux City, but prorated between 100% and 75-50% based on May 1st runoff forecast and storage levels**

Options for Consideration by Agencies

- **6,000 CFS/day during rise**
- **Recommend draw down approximate 30% in 2 days, then draw down gradually to achieve 8 day tail to navigation service levels, consistent with other considerations)**
- **Spread draw down among all reservoirs (to prevent erosion problems in upper reservoirs)**
- **Peak to last 2 days**
- **Use 400,000 AF to stage from Lake Randall, when hydrologic conditions permit**
- **Consider sedimentation issues (later)**

The following items were considered when developing options listed above.

Timing

- Coincident to mountain snow pack
- Peak on May 20th
- Start as early as May 1
- Start no earlier than May 15th

Peak Magnitude

- 30 kcfs over service
- 5 kcfs over service
- 16 kcfs over service
- 35 maximum total release from Gavins Point

Proration

- 100 to 50% based on runoff forecast on storage
- 100 to 75%

Rise

- 1.4 to 2.4 kcfs per day
- 2.2, 5 and 6 kcfs per day (modeled) to targeted peak

Fall

- Three days rapid fall to the kink, and after the kink down to .4 to 1.7 kcfs per day
- All models were kinked models (2 day kink was modeled)
- 5,000 kcfs per day
- Fastest fall to get below current gate elevation, approximately 55,000 at Nebraska City

Peak Duration

- Two days
- One day

Frequency of Occurrence

- No immediate suggestions

5. Interior Drainage/Flood Control Constraints (FCC) During Rises

No agreements were reached on these issues.

Listed below are some of the possible options that were considered by the Plenary Group.

Setting for First rise

- Nothing above existing FCC

- Minimal relaxed at 16,000 – Omaha 8,000, Nebraska City 8,000 and Kansas City 4,000

Setting for Second rise

- Nothing above existing FCC
- Minimal relaxed at 16,000 – Omaha 8,000, Nebraska City 8,000 and Kansas City 4,000

Interior Drainage Constraints

- FS-X

There was discussion of whether the FS-X proposal should have been modeled. The COE stated that the FS-X proposal has tighter flood control constraints than the existing water control plan and that FS-X would produce an adequate number of rises. The COE therefore states that modeling was not needed for FS-X as it would not meet FWS criteria.

6. Items not Addressed at the Fourth Plenary

- Monitoring and Evaluation Recommendations from Technical Working Groups and the Plenary on each of the topics below:

  Hydrology

  Socio-economic

  Historic, cultural and burial

  Pallid Sturgeon

- Other considerations for Pallid Sturgeon Recovery
- Definition/boundaries of Adaptive Management
- Recommendations referred to other entities
  (Clarification of who gets charged for water usage/accounting system for water taken out of reservoirs)

Facilitators note: Items under 5 above were on the agenda but there was not adequate time to discuss them. At the conclusion of the meeting, the COE suggested that it will package the M&E recommendations and send them back out for comment to the former members of the Plenary Group. The Plenary Group approved the Corps' proposal. The package of Technical and Plenary Groups reports and monitoring will be placed on the USIECR web page for the Missouri River Spring Rise.

POSSIBLE INTEGRATIVE PROPOSAL WITH TRADE-OFFS

At the end of the meeting, Chad presented a proposal with some possible trade-offs.

- 49 MAF preclude
- No proration
- Lower quartile runoff preclude on May 1st

♦ Minimally relaxed Flood Control Constraints
+ 8,000 CFS at Omaha
+ 8,000 CFS at Nebraska City
+ 4,000 CFS at Kansas City
♦ Guaranteed bi-modal SR in 2007 with 36.5 MAF preclude

An agreement was not reached on the above proposal.

Recommendation for further inquiry:
The Plenary Group requested that the Corps compare analyses of proposals presented by Lanny Meng (with checks on the numbers), Chad's integrative proposal with trade-offs (with checks on the consequences) and the sideboards provided by the Agencies to assess how well they met socioeconomic and pallid sturgeon goals. The Plenary Group requested that this information be sent to its members and considered by the COE in its future decision making.

Appendix A – Use and Meaning of the 'Meeting Notes'

Plenary and Technical Working Group meeting notes are intended to be a general summary of key issues raised and discussed by participants at meetings. The presentation of issues or items discussed is not designed to be totally comprehensive, or reflect the breadth or depth of discussions. It is intended to record the gist of conversations and conclusions. Where a consensus or other agreement was reached, it will be so noted. Where ideas are comments are from only one or several participants, or where a brainstormed list is presented the content of which was not agreed to by all group members, the recorders will to the best of their abilities note these qualifiers. When participants raise comments about the meeting notes, or make other suggestions or comments following meetings which are more than "corrections," we will add these in a section at the end of the meeting notes captioned "Post Script."

This Meeting Summary is the independent work product of the mediation team from CDR Associates, an independent conflict management firm working under contract to the U.S. Institute for Environmental Conflict Resolution, which is serving in a neutral capacity to assist in the resolution of issues in an alternative dispute resolution process. Ideas developed or proposals discussed during deliberations by either the Plenary Group or Technical Working Group, or agreements on recommendations reached in either forum and recorded in Meeting Summaries are considered to be tentative and subject to review and/or approval by the leadership of participating federal, tribal and state agencies.

Impacts of Spring Rise Components

Changes from the CWCP where Appropriate

Hydrograph/ Iternative Run Name	Component Combination	Flood Control Constraints for Cutbacks to Full Service (kcfs)			Volume of Spring Rise (MAF)			# of SR's	# of Days Exceeding Specified Flow During Rises (M-A & M-J, 1898-1997)					# of Days Exceeding Flood Stage in April-June					Minimum System Storage (MAF)				USGS Spring Rise Dat		
		Omaha	Neb. City	Kan. City	1st Rise	2nd Rise	Total	in 107 yrs.	NC-47kcfs	SJ-55 kcfs	KC-66 kcfs	BN-86 kcfs	HM-110 kcfs	NC-83	SJ-89	KC-200	BN-158	HM-192	30's	50's	80's	00's	Median RDP	Median Duration	# SR > 10th % of Ref
	Magnitude, Proration, Preclude								March-April														1st Rise		
Current Water Control Plan		41	47	71	N/A	N/A	N/A		11.7	11.0	13.6	12.8	15.4	3.3	5.9	1.0	6.4	9.5	26.65	42.06	42.10	36.90	10.3	20.0	0.60
									May-June														2nd Rise		
									23.2	22.4	24.6	20.3	22.4										8.3	21.5	0.34
Hydro-Multi Use					0.15	0.27	0.42																		
	First Rise with **Full Inc in FCC**																								
HMU000	17 kcfs, **17 to 6, 31 MAF**	58 (+17)	64 (+17)	88 (+17)				81	2.3	1.8	0.5	0.1	0	0.7	1.2	0.1	0.4	0.3	-0.26	-0.25	-0.52	-0.13	4.3	-5.0	0.11
HMU040	17 kcfs, **17 to12.13, 40 MAF**	58 (+17)	64 (+17)	88 (+17)				79	2.3	1.8	0.5	0.1	0	0.7	1.2	0.1	0.4	0.3	-0.06	-0.25	-0.52	-0.13	4.3	-5.0	0.10
HMU049	17 kcfs, **17, 49 MAF**	58 (+17)	64 (+17)	88 (+17)				62	2.6	1.9	0.5	0.1	0	0.7	1.2	0.1	0.4	0.3	0.20	0.18	-0.10	0.35	4.3	-4.0	0.10
	Second Rise with **Full Inc in FCC**																								
HMU000	20 kcfs, **20 to 10, 31 MAF**	61 (+20)	67 (+20)	91 (+20)				76	6.9	4.6	2.4	1.6	0.9										8.5	6.5	0.58
HMU040	20 kcfs, **20 to 13.83, 40 MAF**	61 (+20)	67 (+20)	91 (+20)				78	6.8	4.6	2.3	1.6	0.9										8.4	6.5	0.56
HMU049	20 kcfs, **20 to 17.66, 49 MAF**	61 (+20)	67 (+20)	91 (+20)				59	6.3	4.4	2.3	1.5	0.8										7.5	6.5	0.48
	First Rise with **Min Inc in FCC**																								
HMU0F3	17 kcfs, **17 to 6, 31 MAF**	50 (+9)	56 (+9)	76 (+5)				76	2.2	1.6	0.4	0.1	-0.1	0.7	1.2	0.1	0.4	0.3	-0.10	-0.18	-0.41	-0.06	5.4	0.0	0.07
HMU403	17 kcfs, **17 to 12.13, 40 MAF**	50 (+9)	56 (+9)	76 (+5)				78	2.3	1.6	0.4	0.1	-0.1	0.7	1.2	0.1	0.4	0.3	0.05	-0.18	-0.40	-0.06	2.0	-7.8	0.07
HMU493	17 kcfs, **17, 49 MAF**	50 (+9)	56 (+9)	76 (+5)				59	2.3	1.7	0.4	0.1	-0.1	0.7	1.3	0.1	0.4	0.4	0.25	0.20	-0.07	0.38	2.2	-3.5	0.06
	Second Rise with **Min Inc in FCC**																								
HMU0F3	20 kcfs, **20 to 10, 31 MAF**	53 (+12)	59 (+12)	79 (+8)				62	6.6	3.9	2.3	1.3	0.8										10.5	9.0	0.41
HMU403	20 kcfs, **20 to 13.83, 40 MAF**	53 (+12)	59 (+12)	79 (+8)				66	6.5	3.9	2.2	1.3	0.8										6.9	6.5	0.41
HMU493	20 kcfs, **20 to 17.66, 49 MAF**	53 (+12)	59 (+12)	79 (+8)				48	6.3	3.8	2.2	1.2	0.7										4.2	6.5	0.40
HMU0F0	First Rise with **No Inc in FCC**	41 (+0)	47 (+0)	71 (+0)				47	1.8	1.2	0.2	-0.1	-0.1	0.7	1.1	0.1	0.3	0.3	0.39	0.11	0.13	0.34	0.2	-2.0	-0.07
	17 kcfs, **17 to 6, 31 MAF**																								
HMU0F0	Second Rise with **No Inc. in FCC**	41 (+0)	47 (+0)	71 (+0)				30	3.5	2.3	1.5	1.1	0.4										3.3	8.5	0.21
	20 kcfs, **20 to 10, 31 MAF**																								
25% of Reference Hydrograph						0.23	0.74																		
	First Rise with **Full Inc in FCC**	59 (+18)	65 (+18)	89 (=18)				81	2.1	2.1	0.1	-0.2	0.3	0.5	1.1	0.1	0.3	0.3	-0.99	-1.02	-0.92	-0.65	5.6	0.0	0.34
R25000	18 kcfs, **No proration, 31 MAF**																								
	Second Rise with **Full Inc in FCC**	65 (+24)	71 (+24)	95 (+24)				78	6.3	4.1	2.1	1.5	0.9										12.1	9.5	0.68
R25000	24.2 kcfs, **No proration, 31 MAF**																								
	First Rise with **Min Inc in FCC**	51 (+10)	57 (+10)	77 (+6)				81	2.1	2.2	0.1	-0.2	0.4	0.5	1.1	0.1	0.4	0.3	-1.05	-0.84	-0.79	-0.52	5.4	0.0	0.35
R250F3	18 kcfs, **No proration, 31 MAF**																								
	Second Rise with **Min Inc in FCC**	57 (+16)	63 (+16)	83 (+8)				64	6.0	3.2	1.6	1.0	0.7										10.5	9.0	0.65
R250F3	24.2 kcfs, **No proration, 31 MAF**																								
Socio-Economic						0.13	0.27																		
	First Rise with **Min Inc in FCC**	50 (+9)	56 (+9)	76 (+5)				79	2.4	1.7	0.4	-0.1	0.1	0.7	1.4	0.1	0.5	0.4	-0.08	-0.27	-0.32	-0.04	6.5	-2.5	0.37
SEC000	17 kcfs, **17 to 6, 31 MAF**																								
	Second Rise with Min Inc in FCC	57 (+16)	63 (+16)	83 (+12)				73	5.2	3.1	1.8	1.3	0.6										9.6	4.5	0.81
SEC000	24 kcfs, **24 to 10, 31 MAF**																								

Hydrograph/ Iternative Run Name	Component Combination Magnitude, Proration, Preclude	# SR > 25th % of Ref
Current Water Control Plan		0.14
		0.11
Hydro-Multi Use		
	First Rise with **Full Inc in FCC**	
HMU000	17 kcfs, **17 to 6, 31 MAF**	0.11
HMU040	17 kcfs, **17 to12.13, 40 MAF**	0.11
HMU049	17 kcfs, **17, 49 MAF**	0.11
	Second Rise with **Full Inc in FCC**	
HMU000	20 kcfs, **20 to 10, 31 MAF**	0.11
HMU040	20 kcfs, **20 to 13.83, 40 MAF**	0.11
HMU049	20 kcfs, **20 to 17.66, 49 MAF**	0.10
	First Rise with **Min Inc in FCC**	
HMU0F3	17 kcfs, **17 to 6, 31 MAF**	0.07
HMU403	17 kcfs, **17 to 12.13, 40 MAF**	0.06
HMU493	17 kcfs, **17, 49 MAF**	0.07
	Second Rise with **Min Inc in FCC**	
HMU0F3	20 kcfs, **20 to 10, 31 MAF**	0.12
HMU403	20 kcfs, **20 to 13.83, 40 MAF**	0.10
HMU493	20 kcfs, **20 to 17.66, 49 MAF**	0.08
HMU0F0	First Rise with **No Inc in FCC**	0.05
	17 kcfs, **17 to 6, 31 MAF**	
HMU0F0	Second Rise with **No Inc. in FCC**	0.08
	20 kcfs, **20 to 10, 31 MAF**	
25% of Reference Hydrograph		
	First Rise with **Full Inc in FCC**	0.14
R25000	18 kcfs, **No proration, 31 MAF**	
	Second Rise with **Full Inc in FCC**	0.21
R25000	24.2 kcfs, **No proration, 31 MAF**	
	First Rise with **Min Inc in FCC**	0.15
R250F3	18 kcfs, **No proration, 31 MAF**	
	Second Rise with **Min Inc in FCC**	0.06
R250F3	24.2 kcfs, **No proration, 31 MAF**	
Socio-Economic		
	First Rise with **Min Inc in FCC**	0.18
SEC000	17 kcfs, **17 to 6, 31 MAF**	
	Second Rise with Min Inc in FCC	0.27
SEC000	24 kcfs, **24 to 10, 31 MAF**	